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| 08/875,424 | 07/28/97 | HENRICSON | K 30-440 |

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EXAMINER

ALVO, M

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Paper No. 15

Application Number: 08/875,424
Filing Date: July 28, 1997
Appellant(s): Henricson et al

Robert A. Vanderhye
For Appellant

EXAMINER'S ANSWER

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This is in response to appellant's brief on appeal filed December 10, 1999.

(1) *Real Party in Interest*

A statement identifying the real party in interest is contained in the brief.

(2) *Related Appeals and Interferences*

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) *Status of claims.*

The statement of the status of claims contained in the brief is correct.

(4) *Status of Amendments After Final.*

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

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(5) *Summary of invention.*

The summary of invention contained in the brief is correct.

(6) *Issues.*

The appellant's statement of the issues in the brief is correct.

(7) *Grouping of claims.*

Appellant's brief includes a statement that claims 16-19, 21, 22, 24-30 and 32-46 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) *Claims appealed.*

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) *Prior Art of record.*

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

REFERENCES

| | | |
|-----------|-------|------------|
| 5,431,781 | WALSH | July 1995 |
| 94/20674 | WO | Sept. 1994 |
| 0 622 491 | EP | Nov. 1994 |
| 57-21591 | Japan | Feb. 1992 |

MARECHAL, "Acid Extraction of Alkaline Wood Pulps Before or During Bleaching"; J. Of Wood Chemistry and Tech., 13(2), 261-281 (1993), pages 261-281.

(10) *New prior art.*

No new prior art has been applied in this examiner's answer.

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(11) *Grounds of rejection.*

The following ground of rejection are applicable to the appealed claims.

Claims 16-19, 21-22, 24-30, 32-34 and 36-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 94/20674 in view of EP 0 622 491 with or without MARECHAL.

WO 94/20674 teaches bleaching the pulp in an cooking -O-Q-P-Pa bleaching sequence, wherein the Q-stage (e.g. the bleaching sequence which includes the Q-stage) can be preceded by an A-washing stage, thus forming an A-Q-P-Pa or A-Q-P-P bleaching sequences, such doesn't differ from the bleach sequence of the instant process (WO 94/20674, page 5, lines 4-5; and page 11, lines 6-17 and Examples 1-4). It would have been especially obvious to have the AQ stage in separate and/or the same stage as such is taught by EP 0 622 491 (page 3, lines 24-27). See instant claim 34 for Cooking-O-OQ-P sequence. The use of two peroxide stages would have been obvious as WO 94/20674 teaches that additional bleach stages could be followed with one of the following stages (E, P, Eo, Ep, Eop, page 12, lines 13-21) and could be further supplemented by using a P, D and/or H stage during the sequence (claims 19 and 33). See Example 2R for an O-Q-O-P bleach sequence. See Examples 5 and 6 for OQPPaEp, OQP and OQPP bleach sequences. See WO 94/20674, page 5, for conditions in the acid and/or chelating stages; see pages 6 and 7 for conditions in the P-stage; see pages 10 and 11 and Examples 3 and 4 for using a 4th stage with peroxyacid (A). It would have been obvious to the artisan to control the conditions in each stage and the size of the reactor depending upon the desired amount of bleaching in each stage and the total amount of delignification and bleaching desired. The

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addition of magnesium and calcium would have been obvious from the teachings of EP 0 622 491. Claim 19 and 36-46 are rejected as EP 0 622 491 teaches using an O-A-Q-P bleach sequence and teaches that chlorine dioxide can be used during the chelating stage (Example 8). It would have been obvious to chlorine dioxide in the chelating stage of WO 94/20674 and/or EP 0 622 491 to further delignify and bleach the pulp. The adjusting of the pH between stages to the optimum pH for the next stage would have been obvious to the artisan. See Examples 1-5 of EP 0 622 491, Table VII for using 5-30 kg/ton active chlorine in the chlorine dioxide stage., see Examples 4 and 5 of the same Table for using 10-20 kg/ton peroxide. It would have been obvious to size the reaction vessels in each stage depending upon the amount of material and time required in each reactor (tower). See EP 0 622 491, Example 7 for 105 degrees C and obviously corresponding high pressure. The high temperature acid treatment of WO 94/20674 and or EP 0 622 491 would also decrease the kappa number as such high temperature treatment of acids or even water is known to provide some delignification which would remove dark colored lignin and whiten the pulp. If necessary, MARECHAL specifically teaches that the lowering of kappa number during an acid pretreatment is due to the acid stage (page 266, first full paragraph). It would have been obvious to the artisan that at least some of the kappa number reduction in the process of WO 94/20674 and/or EP 0 622 491 would be due to the acid treatment as such is taught by MARECHAL.

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Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO 94/20674 in view of EP 0 622 491 with or without MARECHAL as applied to claim 1 above, and further in view of JP 57-21591 and WALSH.

JP 57-21591 teaches a Q-Pa-P bleaching sequence. It would have been obvious that the Pa-stage of WO 94/20674 could precede the P-stage of WO 94/20674 as taught by JP 57-21591. It would have been obvious that the chelating agent of WO 94/20674 could be both prior to and in the Pa-stage as such is taught by WALSH (column 5, lines 4-7).

(12) *New ground of rejection.*

This Examiner's Answer does not contain any new ground of rejection.

(13) *Response to argument.*

The argument that WO 94/20674 (DEVYNS et al) does not teach acid pretreatment is not convincing as WO 94/20674 teaches (translation, page 4, paragraph 4) that "...as a variant to let the sequence of the treatment stages according to the invention be preceded by a wash or decontamination pretreatment stage by means of an aqueous acid solution and/or a solution of a metal ion sequesterant (Q-stage)." ... "Strong inorganic acids such as sulphuric acid or hydrochloric acid are well suited." . It is further noted that the use of bleach towers for various bleaching steps is well known in the art and the use of towers for each stage of a bleaching sequence would be obvious to one of ordinary skill in the art.

The argument that the acid stage of EP 0 622 491 is optimized for removing the metal ions and not for lowering the kappa number is not convincing. The instant claimed and disclosed

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conditions overlap the conditions of EP 0 622 491. It is well known in the delignifying art that acid hydrolysis provides some delignification (removing of lignin) and thus lowers the kappa number (measurement of lignin in the pulp). EP 0 622 491 teaches using an acid treatment at a temperature up to 100 DEGREES C, a preferred time of 10-60 minutes (page 5, lines 27-30) and a preferred pH of 2.0-3.0 (page 4, lines 12-13). Such acid treatment is known in the art to lower the kappa number of the pulp (see instant specification, page 1, lines 17-24). Similar acid conditions are taught by WO 94/20674 (page 2 of translation). The argument that the acid stage of WO 94/20674 and/or EP 0 622 491 removes the metal ions but do not teach lowering the kappa number is further not convincing as EP 0 622 491 teaches that preferably a delignifying agent e.g. chlorine dioxide, can be added to the acid stage (page 5, lines 51-56). Such an acid stage would clearly delignify the pulp in addition to removing the undesired metal ions. The mere recitation of a newly discovered function, considered as inherently possessed by the prior art process, does not cause claims drawn thereto to distinguish over the prior art. In re Best, 195 USPQ 430, 433 (CCPA 1977). Hence the prior art references use the same steps of treating pulp under high temperature acid conditions, which are the same or very similar to and have the same characteristics as Applicant's pulp product. The pulp of EP 0 622 491, after acid treatment, would have the same decreased kappa number as the instant pulp as it is treated under the same acid conditions. Besides MARECHAL specifically teaches that the lowering of kappa number during an acid pretreatment is due to the acid stage (page 266, first full paragraph). It would have been obvious to the artisan that at least some of the kappa number reduction in the process of WO

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94/20674 and/or EP 0 622 491 would be due to the acid treatment as such is taught by MARECHAL. It would be obvious to the artisan to use the higher temperatures taught by EP 0 622 491 as MARECHAL teaches such high temperatures allow acid extraction to be performed in less than one hour, e.g. MARECHAL, page 276, lines 1-3.

It is noted that WO 94/20674 teaches that the bleaching sequence can be preceded by an acid and or sequestering wash or decontaminating pretreatment on page 4 of the translation. In addition EP 0 622 491, Table 1, Test 1 and Table II, tests 1-3 teaches an A-Q-P bleaching sequence wherein the acid treatment precedes the acid treatment. It would thus have been obvious to the routineer to have separate acid and chelating stages prior to the peroxide stage of WO 94/20674 as taught by EP 0 622 491 for better removal of the unwanted metal ions. Two metal ion removal steps would be expected to remove more metal ions than the single metal ion removal step of WO 94/20674.

The argument, with respect to claims 35, that there is no motivation to combine JP 57-21591 and WALSH is not convincing. Appellant has not shown the specific sequence of claim 35 to have any unexpected results over other bleaching sequences. WO 94/20674 teaches that the delignification process can be supplemented with one or several bleaching sequences (translation page 5) and teaches using two peroxide stages, e.g. Examples 3-6, including an O-Q-P-Pa bleach sequence. The order of the subsequent bleach stages has not been shown to be critical. JP 57-21591 teaches a Q-Pa-P bleaching sequence. It would have been obvious that the Pa-stage of WO 94/20674 could precede the P-stage of WO 94/20674 as taught by JP 57-21591. It would

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have been obvious that the chelating agent of WO 94/20674 could be both prior to and in the Pa-stage as such is taught by WALSH (column 5, lines 4-7).

With respect to claim 19 is argued that WO 94/20674 does not disclose adding chlorine dioxide prior to or during the chelating stage is not convincing for the reasons set forth supra. EP 0 622 491 teaches using an O-O-Q-P bleach sequence and teaches that chlorine dioxide can be added during the chelating stage (page 5, lines 27-30, page 4, lines 521-56 and Example 8). It would have been obvious to chlorine dioxide in the chelating stage of WO 94/20674 and/or EP 0 622 491 to further delignify and bleach the pulp.

Appellants do not present any specific arguments as to how the limitations set forth in the other dependent claims are separately patentable over the cited prior art. Appellant merely recites the language of each dependent claim and states the art does not teach or suggest the combination for each dependent claim. In the absence of substantive arguments explaining why the specific limitations in the rejected claims render the claims separately patentable over the applied art, the rejections of these dependent claims should be affirmed. See 37 CFR § 1.192 (c)(6)(iv)(1993).

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



STEVE ALVO
PRIMARY EXAMINER
ART UNIT 1731

MSA
February 28, 2000
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